

CLINICAL AND HISTOPATHOLOGICAL CORRELATION OF CUTANEOUS TUBERCULOSIS

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ABSTRACT**INTRODUCTION**

Cutaneous tuberculosis is a chronic disease caused by Mycobacterium tuberculosis. It is primarily a granulomatous disease. We studied the clinical pathological profile of 42 cases of cutaneous tuberculosis in Osmania General Hospital from December 2010 – October 2012.

METHODS

A total of 42 cases of cutaneous tuberculosis attending DVL OPD at Osmania General Hospital were studied along with clinical features, age, sex, duration of illness in correlation with Mantoux test and types of cutaneous lesions.

RESULTS

Out of 42 cases, commonest variant was Lupus vulgaris (38.06%). Majority (37.5%) of the cases were in the age group of 21-30 years. Male preponderance was noted in the study with highest incidence in the low socioeconomic group. The location of cutaneous tuberculosis was high in head and neck region (23.80%) and clinically majority of cases were (38.06%) found to be Lupus vulgaris variant.

CONCLUSIONS

Among the various types of cutaneous tuberculosis, Lupus vulgaris is the commonest variant followed by scrofuloderma in the study population. The other variants like Tuberculosis verrucosa cutis accounted to 19.04% of the study cases. A small percentage were contributed by Lichen scrofulosorum (2.38%) and Papulonecrotic tuberculids (2.38%) respectively. Lupus vulgaris was the most common histopathological variant. Most of the components of cutaneous tuberculosis on histopathology exhibited hyperkeratosis, hyperplasia, pseudoepitheliomatous changes; lymphocytic dermal infiltrate, epithelioid cell granulomas in the dermis, vasculitis changes in the dermis with changes of septal or lobular panniculitis.

KEYWORDS

Cutaneous Tuberculosis, Clinical Variant, Histopathology, Granuloma.

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INTRODUCTION: Since time immemorial, tuberculosis has been ranked among the most feared and dreaded of the numerous diseases that affect mankind. The evangelist John Bunyan I described tuberculosis as the captain of all those diseases which causes death in India and was known as "King of Diseases".¹ Tuberculosis has wide distribution in the world and is most prevalent in the tropics and subtropics². Tuberculosis acts as a presenting feature of HIV infection or AIDS related complex. Clinical presentation of cutaneous TB is not always clear and misinterpretation of cases as other dermatosis like sarcoidosis, deep fungal infections, viral infections and malignancies like squamous cell carcinoma were common. Histopathological examination plays a major role in the diagnosis.

The study was conducted to correlate clinical appearance of the lesions in relation to the histopathological features.

MATERIAL AND METHODS: The study was conducted in the DVL Department Osmania General Hospital, Hyderabad from December 2010 to October 2012.

A total of 42 clinically diagnosed as cutaneous tuberculosis were included for studying the clinical and histopathological aspects of cutaneous tuberculosis.

Inclusion Criteria:

1. All the cases with clinical features of cutaneous tuberculosis like papules, plaques, nodules, lymph node enlargement with abscess formation, plaque and ulcers suggestive of tuberculosis aetiology.
2. All the fresh cases were taken for the study.
3. All cases who were not on treatment prior to coming to the hospital.

Exclusion Criteria:

1. Cases already on ATT treatment of > 1 month.
2. Cases where the Biopsy specimen was considered inadequate.

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Clinical features like age, sex duration and type of the lesions were noted. Significant family history and personal history was recorded. All the patients were subjected to investigations like complete blood picture, erythrocyte sedimentation rate, liver function test, renal function test, random blood sugar. retroviral screening was done. They were also subjected to Mantoux test to correlate the immunological status of the patients with type of the lesions. Chest X-ray was done in all the patients to rule out concomitant pulmonary tuberculosis. Other investigations like FNAC of the lymph nodes if present, ultrasound abdomen and pelvis, x-ray spine were done whenever necessary and all the details were entered in the proforma.

After detailed general and local examination, the site of biopsy was selected. The selected patients' consent was taken after explaining the details of biopsy procedure. A wedge biopsy was done in all the cases with inclusion of the full depth of the dermis together with a portion of the subcutaneous fat and the wound closed by one to two sutures. The biopsy specimens are stained with H&E and the histopathological features were studied under a microscope for detection of bacilli. Ziehl-Neelsen method of staining was used for staining the slides. Histopathological changes were noted in a sequential order. Epidermal changes like hyperkeratosis, hyperplasia, pseudoepitheliomatous changes, lymphocytic dermal infiltrate, epithelioid cell granulomas in the dermis, vasculitis changes in the dermis with changes of septal or lobular panniculitis and Langhans giant cells were noted.

All the features are noted for comparison with clinical sub type of cutaneous tuberculosis.

RESULTS: Fisher's exact test was used to assess associations between various variables. All analyses were performed using SPSS software. P-value of less than 0.05 was considered statistically significant.

	No. of Cases	No. of Percentage
0 – 10 yrs.	3	7.5%
11-20 yrs.	13	32.5%
21-30 yrs.	16	37.5%
31-40 yrs.	5	10%
41-50 yrs.	1	2.5%
51-60 yrs.	4	10%
62-70 yrs.	0	0%

Table 1: Age wise Distribution and % of Cases

Age group maximum affected was in the age group range 21-30 yrs. which showed maximum incidence of 37.5%.

Socio Economic Status	Number of Patients
Low	24
Middle	17
High	1

Table 2: Showing Socioeconomics Status

Low socioeconomic status patients were the most affected.

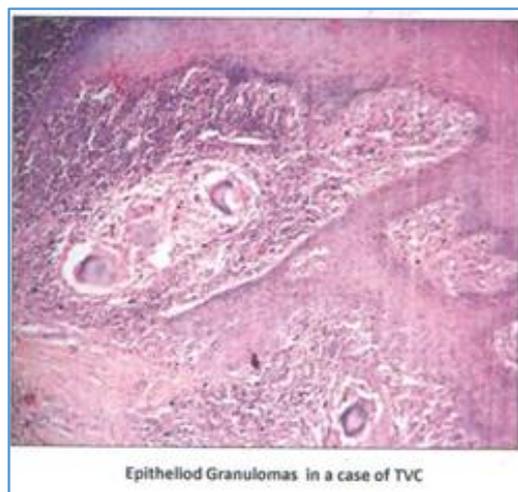
	No. of cases	No. of Percentage
Head and neck	10	23.80%
Upper limb	9	21.43%
Lower limb	9	21.43%
Chest	6	14.30%
Trunk	1	2.38%
Mixed Pattern	7	16.7%

Table 3: Regional Location of Cutaneous TB

Head and neck was the region which was mostly affected.

Sex Wise Distribution: Total number of cases (42) Males 29 Females 13 Males were more affected than females.

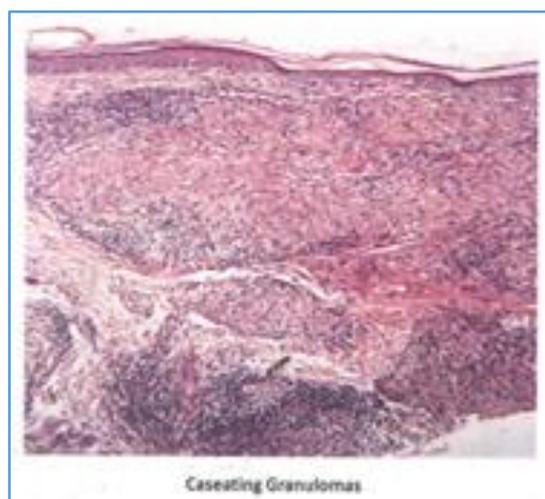
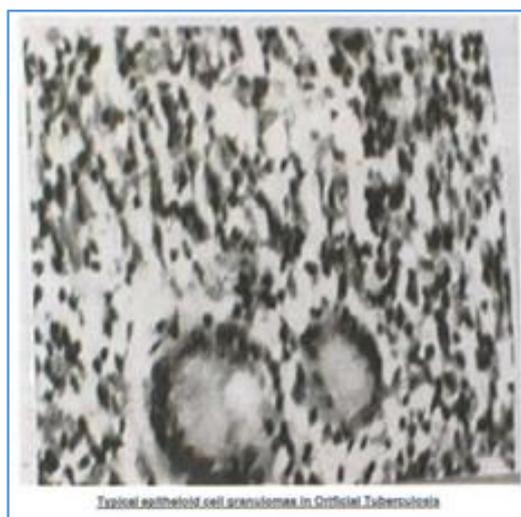




	Number of Patients
TVC	8 cases (19.04%)
Lupus vulgaris	16 cases (38.06%)
Lichen scrofulosorum	1 case (2.38%)
Papulonecrotic tuberculids	1 case (2.368%)
Scrofuloderma	14 cases (33.33%0

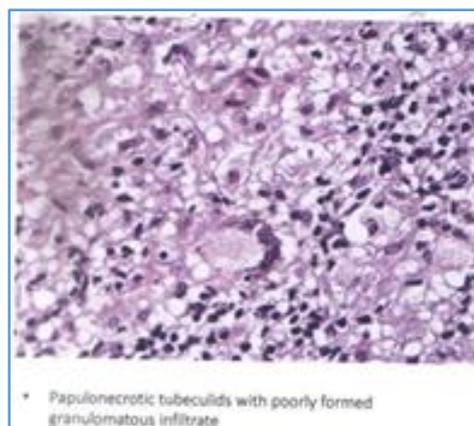
Table 4: Histopathological Diagnosis

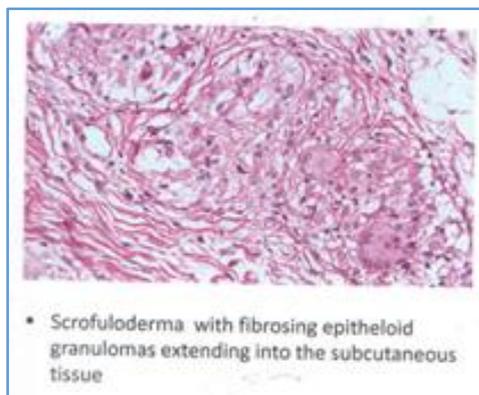
Lupus vulgaris was the most common histopathological diagnosis.



	1-6 month	6 month to 1 year	1-2 years	2-3 years	3-4 years
Lupus vulgaris	2	5	7	2	
Scrofuloderma	9	4	1		
Papulonecrotic tuberculids	1	1	1		
Lichen Scrofulosorum	-	1	-		

Table 5: Average Duration of illness in different from of Cutaneous TB





Average duration of illness before presenting to us was 6-12 months.

	Vaccinated	Non-Vaccinated
Lupus vulgaris	8	8
Scrofuloderma	8	6
Papulonecrotic tuberculids	1	0
Lichen scrofulosorum	1	0
Tuberculosis verrucosa cutis	6	2

Table 6: BCG Vaccination

Vaccinated – 24, Non-vaccinated – 18.

	5 mm	5-10 mm	10 mm	> 100 mm
Lupus vulgaris	2	4	6	4
Tuberculosis verrucosa cutis		3	2	3
Papulonecrotic tuberculids			3	1
Scrofuloderma			8	6
Lichen scrofulosorum		1		

Table 7: Correlation with Mantoux test

Most of the patients were with Mantoux > 10 mm.

Lupus vulgaris	22 mm
Scrofuloderma	32 mm
Tuberculosis verrucosa cutis	15 mm
Lichen scrofulosorum	10 mm
Papulonecrotic tuberculids	18 mm

Table 8: Average ESR in Various form of Cutaneous Tuberculosis

Average ESR was 19 mm.

Scrofuloderma	1
Lupus vulgaris	1
Tuberculosis verrucosa cutis	0
Papulonecrotic tuberculid	1
Lichen scrofulosorum	0

Table 9: Cutaneous Tuberculosis associated with HIV

3 patients were HIV +Ve.

Diagnosis	Clinical diagnosis	Histopathological Diagnosis	% Concordance	% Discordance
Lupus vulgaris	6	13	69.63	30.37
Tuberculosis verrucosa cutis	8	5	62.50	37.50
Scrofuloderma	14	14	100	Nil
Papulonecrotic tuberculids	4	3	75	25
Lichen scrofulosorum	1	1	100	Nil

Table 10: Correlation and Agreement between Clinical and Histopathological Diagnosis

Maximum concordance of 69.63% was seen in Lupus vulgaris cases.

Total number of 42 skin biopsies were correlated clinically and histopathologically. Age of the patients ranged from 2 years to 57 years, most of the patients were in the age group of 21-30 years. Out of total number of cases, males (42) were more affected than females (29). Out of 42 cases of cutaneous tuberculosis studied, 16 (38.06%) cases were of Lupus vulgaris; 14 (33.33%) cases were of scrofuloderma; 8 (19.04%) cases were tuberculosis verrucosa cutis; 1 (2.38%) each of papulonecrotic tuberculid and lichen scrofulosorum. Among the correlation and agreement between clinical and histopathological diagnosis, lupus vulgaris had 69.63% concordance and 30.37% discordance, scrofuloderma had 100% concordance. Tuberculosis verrucosa cutis had 62.50% concordance and 37.50% discordance; papulonecrotic tuberculids had 75% concordance and 25% discordance in histopathological findings.

The average duration of illness before the presentation to the study was 6-12 months. The percentage of cutaneous TB at various sites of body are head and neck 10 (23.80%); upper limbs 9 (21.43%), lower limb 9 (21.43%); chest 6 (14.30%); trunk 1 (2.38%) and mixed pattern 7 (16.7%). The status of BCG vaccination in the study group was 56% (24) were vaccinated and 44% (18) were non-vaccinated. The correlation of Mantoux test showed positivity of >10 mm in 19 cases and > 100 mm in 14 cases. The values of ESR in the study group ranged from 10 mm to 32 mm the average ESR was 19 mm.

The HIV association is seen in 1 case each with Lupus vulgaris; scrofuloderma and papulonecrotic tuberculids, thus accounting to 3 cases out of 42 cases. A positive family history of pulmonary tuberculosis is associated with lupus vulgaris 2 (4.9%) in our study.

DISCUSSION: This prospective study is done to assess the cases of cutaneous tuberculosis in various morphological forms and to correlate clinically and histopathologically and also to study the various forms in their presentation.

In a majority of studies in India, cutaneous tuberculosis showed a higher incidence in men which correlates to our study with maximum incidence of cases between age group

of 11 – 30 years (70%). But the disease was reported at a slightly later age by other studies.^{1,2,3}

In the present study, the youngest age was of 2 ½ years and oldest age 50 years respectively at their presentations. This is in accordance with the studies of Kumar et al.⁴ Many patients sought medical help as early as 6 months and the longest interval was 30 years in various studies.

The male to female ratio was 1.1: 1 in our study which was in correlation to a study conducted by Singal et al⁵ (1.1:1).

The positive family history of pulmonary tuberculosis is seen in 9.8% in our study which is low when compared to the study done by Ramesh et al⁶ which is on higher side of 19.0%. The BCG vaccination was seen in about 6 cases of lupus vulgaris, out of 16 (42%) which is concordance with 41% in the study by Pandit et al.⁷

The Mantoux reactivity was seen with reading greater than >10 mm in about 33 cases (79.9%) which is in concordance to the study by Singal et al (75%) and to (85.5%) the study conducted by Kumar et al.^{4,5}

In our study, the commonest type of cutaneous tuberculosis was lupus vulgaris accounting to 38.06% with face and lower limb involvement. This is in concordance with the study of Kumar et al 40% with face and lower limb involvement. Scrofuloderma cases accounted to 36.9% with neck region for common presentation and this correlates to 44% of neck involvement in the study by Pandit et al. Tuberculous verrucosa cutis was high on comparison to the 4.0% of the study conducted by Kumar et al.^{4,8}

Papulonecrotic tuberculid and lichen scrofulosorum accounted to 2.38% each which are almost in correlation to the study conducted by Vasishta et al 3.9% respectively. The clinicopathological concordance of our study were almost correlating more or less to other studies in India. It is about 81.4% in our study which correlates with study of Kumar et al 64%, Singh et al 88.6%, Pandit et al 80.6% and Vashist et al (70.9%).^{4,7,8,9}

In the present study, a definite history of trauma preceded the onset of TVC in 3 cases (38%), multiple cutaneous tuberculosis lesions (combination of scrofuloderma and lupus vulgaris) in 2 cases.¹⁰

Regional lymphadenopathy was present in 20% of TVC cases and in 25% with lupus vulgaris cases. The inguinal lymph nodes (33%) were the most common group involved. In our study, one each case of lupus vulgaris, scrofuloderma and papulonecrotic tuberculosis were HIV +ve (total of 3 cases) where the histopathology findings were not significantly different from other people.

The protective role of BCG vaccination against tuberculosis is controversial with claims of efficacy ranging from '0' in South India to 75% in Western Country.

In our study, 100% of lupus vulgaris; 75% of TVC, 60% of scrofuloderma, 100% of papulonecrotic tuberculids, 100% of lichen scrofulosorum had a scar of BCG.

The average ESR in various form of cutaneous tuberculosis was 20 mm with high values in scrofuloderma cases.

In histopathological examination, none of the cases with lupus vulgaris or TVC have shown epidermal atrophy as reported by earlier works in their studies.

In tuberculosis, skin disease with high levels of skin sensitivity, the number of bacteria within the lesion is small. It was hypothesised that in secondary tuberculosis due to a greater degree of immunity only a few number of bacteria will be found since only a small percentage of cases have positive smear or culture¹¹. One case of gluteal granulomas with associated dorsolumbar spinal Koch's was observed during this study and clinical correlation is considered important.

CONCLUSION

- In conclusion, our results indicate that among various types of cutaneous tuberculosis, the most common type was Lupus Vulgaris followed by Scrofuloderma.
- Males were more commonly affected than females.
- Age group most affected is 21-30 years.
- Correlation was seen between clinical and histopathological diagnosis in about 81.40% of cases.
- More than 90% of the cases of all forms of cutaneous tuberculosis showed excellent clinical response with treatment with a high percentage in cases of scrofuloderma and Lupus Vulgaris which healed with atrophic scarring.
- Histopathology is especially useful in the diagnosis of papulonecrotic tuberculosis where bacilli cannot be isolated by culture.
- HIV seropositivity was associated with 1 case of Lupus Vulgaris, one case of Papulonecrotic Tuberculids and one case of Scrofuloderma.
- In our study, cutaneous tuberculosis has a clinical and histopathological concordance in about 81.4% of cases which comes very close to many national and international studies.

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